

Newquay Primary Academy – Design and technology Spring Term 1 Sequence



YEAR 3

Prior knowledge...
 The parts of an object that move together as part of a machine is called a mechanism.
 A lever is something that turns on a pivot and that a linkage is a system of levers that are connected by pivots.

YEAR 4

Prior knowledge...
 Electricity is the flow of electrical power or charge.
 An electrical circuit comprises of electrical components.
 A battery is an electrical power source
 A circuit must form a loop for electrical current to flow.

YEAR 5

Prior knowledge...
 Pupils can:
 Follow a recipe, with some support.
 Describe some of the features of sushi based on taste, smell, texture and appearance.
 Adapt a recipe by adding extra ingredients to it.
 Plan a sushi recipe within a budget.

YEAR 6

Prior knowledge...
 Pupils can:
 A structure is something which stands, usually on its own.
 The strength of structures can be affected by the shapes used.
 Forces can change the shape of objects, they can also make objects begin to move, speed up or slow down.
 I can measure, saw and join wood accurately.

INTENT

Mechanical Systems:
Pneumatic toys
 Pupils design and create a toy with a pneumatic system, learning how trapped air can be used to create a product with moving parts while also building on their design knowledge.

Electrical systems: Torches
 Pupils design and build an electrical circuit of a torch made from easily available materials and objects.

Food: What could be healthier?
South American stew
 Pupils will learn where food comes from (from farm to fork) and understand the term 'healthy'. Pupils will adapt a recipe to be healthier, prepare ingredients (chop, measure) and cook their meal over a campfire.

Structures: Anderson shelter
 Pupils understand the historical significance of an Anderson shelter, including how they were constructed and what materials they were made from. Children will research, design and make their own air raid shelter selecting from arrange of materials. Pupils will carry out a series of tests in order to evaluate the effectiveness of their shelter.

Exploded diagram, function, input, linkage, mechanism, motion, net, output, pivot,

Battery, bulb, buzzer, cell conductor, copper, design criteria, electrical item,

Beef, reared, processed, ethical, diet, ingredients, supermarket, farm,

Anderson Shelter, Construction, structure,

VOCABULARY / STICKY KNOWLEDGE

pneumatic system,
thumbnail sketch

electricity, electrical item,
insulator, series circuit, switch,
test, torch, wire

balanced, healthy, adapt,
nutrition

strength, compressive
force, resist, sheet metal
, corrugated metal, steel,
iron , rust, galvanized ,
modelling, tin snips, file,
wet and dry paper

SEQUENCE OF LESSONS

Lesson 1: Exploring pneumatics

In this practical lesson, children investigate and explore different pneumatic systems.

Lesson 2: Designing a pneumatic toy

The children use their understanding of pneumatics to design their own pneumatics toys through thumbnail sketches and exploded diagrams.

Lesson 3: Making pneumatic toys

Children create a working pneumatic system and casing for their toys.

Lesson 4: Decorating and assembling my toy

Pupils add decorations and assemble the final

Lesson 1: Electrical products

Pupils explore the difference between 'electrical' and 'electronic' and revisit how to create a simple circuit.

Lesson 2: Evaluating torches.

Pupils evaluate a range of different torches and identify the features of a torch: housing, reflector, circuit and switch.

Lesson 3: Torch design

Pupils create a torch design, building on their understanding from and incorporating features they have identified in previous lessons.

Lesson 4: Torch assembly

The children build the circuit and housing for their torches, closely following their designs from the previous lesson.

Lesson 1: From farm to fork

To understand where food comes from

Lesson 2: What does healthy look like?

To understand the term 'healthy'

Lesson 3: Adapting and improving a recipe

To adapt a recipe with healthy adaptations

Lesson 4: Mamma mia! What a tasty, healthy stew!

Pupils build their own campfire, prepare and cook their healthy South American stew

Lesson 1: Research

To understand the significance of the Anderson Shelter and identify their key features.

Lesson 2: Design

To design their own shelter following a strict specification and drawing on their understanding of structures.

Lesson 3: Making

To construct an air raid shelter selecting the most appropriate materials and tools for the job.

Lesson 4: Testing and evaluating.

To carry out a series of tests to test their shelter and suggest improvements.

components to complete their pneumatic toys.

**OUTCOME /
COMPOSITE**

To create a pneumatic toy of a dragon.

Children make a torch using an electrical circuit and a housing made from recycled materials.

To have adapted a recipe to make it healthier.

To have made a prototype of a robust aid raid shelter.